

We claim:

- 1 1. A method of regulating an average rate of transmission on a computer network
2 employing TCP, comprising the steps of:
3 determining an amount of available space in a receive buffer; and
4 removing data from the receive buffer such that the amount of available
5 space in the receive buffer is maintained at a regulated value.
- 1 2. The method of claim 1, wherein the step of removing data includes regulating the
2 frequency at which data is read from the receive buffer.
- 1 3. The method of claim 1, wherein the step of removing data includes regulating the
2 amount of data read during each read from the receive buffer.
- 1 4. The method of claim 1, wherein a receiver measures an actual transfer rate.
- 1 5. The method of claim 1, wherein the step of determining an amount of available
2 space in a receive buffer is performed by a rate control module located on a
3 receiver.
- 1 6. The method of claim 5, wherein the rate control module operates above a TCP
2 layer and communicates with the TCP layer via a TCP application programming
3 interface.
- 1 7. The method of claim 1, wherein the average rate of transmission is regulated to an
2 extent sufficient to reduce the effect that a transmission has on another
3 transmission in the computer network.
- 1 8. The method of claim 1, wherein the step of removing data uses a determined
2 frequency of lost packets.

- 1 9. A method of regulating an average rate of transmission on a computer network
2 employing TCP, comprising the steps of:
3 determining an amount of available space in a receive buffer; and
4 regulating an available space in the receive buffer by regulating a size of
5 the receive buffer.
- 1 10. The method of claim 9, wherein a receiver determines an actual transfer rate.
- 1 11. The method of claim 9, wherein the step of determining an amount of available
2 space in a receive buffer is performed by a rate control module located on a
3 receiver.
- 1 12. The method of claim 11, wherein the rate control module operates above a TCP
2 layer and communicates with the TCP layer via a standard TCP application
3 programming interface.
- 1 13. The method of claim 9, wherein the average rate of transmission is reduced.
- 1 14. The method of claim 13, wherein the reduction in average rate of transmission is
2 sufficient to reduce the effect that a transmission has on an other transmission in
3 the computer network.
- 1 15. The method of claim 9, wherein the step of reducing the receive buffer size uses a
2 determined frequency of lost packets.

- 1 16. A system for regulating an average rate of transmission on a computer network,
2 comprising:
3 a receive buffer located on a receiver; and
4 a rate control module operable to determine available space in the receive
5 buffer and to regulate a rate at which data is removed from the
6 receive buffer, such that the amount of available space in the
7 receive buffer is maintained at a regulated value.
- 1 17. The system of claim 16, wherein the rate control module regulates the rate at
2 which data is removed by varying the frequency at which data is read from the
3 receive buffer.
- 1 18. The system of claim 16, wherein the rate control module regulates the rate at
2 which data is removed by varying the amount of data read during each read from
3 the receive buffer.
- 1 19. The system of claim 16, wherein the rate control module operates above a TCP
2 layer and communicates with the TCP layer via a standard TCP application
3 programming interface.
- 1 20. The system of claim 19, wherein the rate control module operates between the
2 TCP layer and an FTP/HTTP layer.
- 1 21. The system of claim 19, wherein the rate control module is integrated into a
2 FTP/HTTP layer.
- 1 22. The system of claim 16, wherein the average rate of transmission is reduced.
- 1 23. The system of claim 22, wherein the reduction in average rate of transmission is
2 sufficient to reduce the effect that a transmission has on another transmission.

- 1 24. The system of claim 16, wherein the regulation of a rate at which data is removed
2 is a function of a determined frequency of lost packets.
- 1 25. A system for transmitting data over a computer network employing TCP,
2 comprising:
3 a sender;
4 a receiver;
5 a receive buffer located on the receiver; and
6 a rate control module configured to regulate an amount of space available
7 in the receive buffer to influence an average rate that data is
8 transferred from the sender to the receiver.
- 1 26. The system of claim 25, wherein the rate control module regulates the amount of
2 space available in the receive buffer by varying the frequency at which data is
3 read from the receive buffer.
- 1 27. The system of claim 25, wherein the rate control module regulates the amount of
2 space available in the receive buffer by varying the amount of data read during
3 each read from the receive buffer.
- 1 28. The system of claim 25, wherein the rate control module operates above a TCP
2 layer and communicates with the TCP layer via a standard TCP application
3 programming interface.
- 1 29. The system of claim 28, wherein the rate control module operates between the
2 TCP layer and an FTP/HTTP layer
- 1 30. The system of claim 28, wherein the rate control module is integrated into a
2 FTP/HTTP layer.
- 1 31. The system of claim 25, wherein the average rate of transmission is reduced.

1 32. The system of claim 31, wherein the reduction in average rate of transmission is
2 sufficient to reduce the effect that a transmission has on an other transmission.

1 33. The system of claim 25, wherein the rate control module regulates the amount of
2 space using a determined frequency of lost packets.

1 34. The system of claim 25, further comprising at least a transfer manager regulating
2 communication between the sender and the receiver.

1 35. The system of claim 34, wherein the transfer manager includes at least a
2 schedule/priority manager.